

# APK: Applied Kinesiology Courses

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## Courses

### APK 2000 Introduction to Exercise Science

College of Health, Department of Movement Sciences and Health  
3 sh (may not be repeated for credit)

This course is an introduction to the discipline of Exercise Science and provides an overview of exercise physiology, sport and exercise psychology, biomechanics, motor behavior, sport nutrition, and other related topics. This course also provides information on career paths that stem from the Exercise Science discipline.

### APK 2100 Applied Human Anatomy and Physiology I

College of Health, Department of Movement Sciences and Health  
3 sh (may not be repeated for credit)  
Co-requisite: APK 2100L

This class is the first of a two-semester sequence which provides a comprehensive study of human anatomy and physiology from a systematic approach. Topics include the structure, function, and interrelationship of organ systems with an emphasis on the processes which produce movement and maintain homeostasis. Understanding anatomical terminology, gross structures, and locations of different body structures are primary objectives. Upon completion, students should be able to demonstrate an in-depth understanding of the principles of anatomy and physiology and their interrelationships. This course is designed for students interested in pursuing study in the health professions.

### APK 2100C Applied Human Anatomy and Physiology I with Laboratory

College of Health, Department of Movement Sciences and Health  
4 sh (may not be repeated for credit)

This class is the first of a two-semester sequence which provides a comprehensive study of human anatomy and physiology from a systematic approach. Topics include the structure, function, and interrelationship of organ systems with an emphasis on the processes which produce movement and maintain homeostasis. Understanding anatomical terminology, gross structures, and locations of different body structures are primary objectives. Upon completion, students should be able to demonstrate an in-depth understanding of the principles of anatomy and physiology and their interrelationships. This course is designed for students interested in pursuing study in the health professions.

### APK 2100L Applied Human Anatomy and Physiology I Laboratory

College of Health, Department of Movement Sciences and Health  
1 sh (may not be repeated for credit)  
Co-requisite: APK 2100

Lab associated with lecture course. Exercises parallel topics presented in the lecture series: axial skeleton, appendicular skeleton, joints, muscle tissue, and the muscular system.

### APK 2105 Applied Human Anatomy and Physiology II

College of Health, Department of Movement Sciences and Health  
3 sh (may not be repeated for credit)  
Prerequisite: APK 2100C OR BSC 1085/L OR APK 2100/L  
Co-requisite: APK 2105L

This course is the second of a two-semester sequence of the study of the structure, function, and homeostasis of the human body. The endocrine, cardiovascular, lymphatic, respiratory, digestive, urinary and reproductive systems, will be covered as well as the concepts of development, metabolism, fluid and electrolyte balance, and acid-base balance. Upon completion, students should be able to demonstrate an in-depth understanding of the principles of anatomy and physiology and their interrelationships. This course will encourage students to consider how physiological systems are dependent on each other, and develop the ability to apply this understanding in novel case-based situations. This course will provide a sound basis in human anatomy and physiology to support further study in health and medical sciences, or related fields.

### APK 2105L Applied Human Anatomy and Physiology II Laboratory

College of Health, Department of Movement Sciences and Health  
1 sh (may not be repeated for credit)  
Prerequisite: APK 2100C OR BSC 1085/L OR APK 2100/L  
Co-requisite: APK 2105

Lab associated with lecture course. Exercises parallel topics presented in the lecture series: nervous system and nervous tissue, somatic NS, cardiovascular system, circulation, respiratory physiology, digestion, absorption, metabolism, and urinary physiology.

### APK 3110 Exercise Physiology

College of Health, Department of Movement Sciences and Health  
3 sh (may not be repeated for credit)  
Prerequisite: (CHM 2045/L) AND (APK 2105C OR BSC 1086/L OR PCB 3097/L OR APK 2105/L) AND (MAC 1105 OR MAC 1105C OR MAC 1114 OR MAC 1140 OR MAC 2311)  
Co-requisite: APK 3110L

Application of physiological principles to the study of human physical performance related to health, sports, and leisure activities.

### APK 3110L Exercise Physiology Laboratory

College of Health, Department of Movement Sciences and Health  
1 sh (may not be repeated for credit)  
Co-requisite: APK 3110

Student shall become familiar with instruments and test procedures used to gather data on the physiology of exercise. Material and Supply fee will be assessed.

### APK 3220C Biomechanical Basis of Movement with Laboratory

College of Health, Department of Movement Sciences and Health  
4 sh (may not be repeated for credit)  
Prerequisite: (APK 3110/L) AND (ATR 3132 OR PCB 3097/L)

The fundamentals of engineering (kinematics and kinetics) related to motor skills and human performance are introduced. Basic college mathematics and physics knowledge will be applied to problem-solving in a classroom setting.

**APK 4114C Physiological Basis of Strength Development**

College of Health, Department of Movement Sciences and Health

3 sh (may not be repeated for credit)

Prerequisite: APK 3110L AND APK 4163\* AND ATR 3132

This course covers the physiological functions of skeletal muscle and the dynamics of strength development.

**APK 4119 Exercise Testing for Special Populations**

College of Health, Department of Movement Sciences and Health

3 sh (may not be repeated for credit)

Prerequisite: APK 4125/L

This course is designed to provide the student with a basic understanding of the pathophysiology and exercise responses in special populations based on the American College of Sports Medicine guidelines. The course will also focus on the understanding diagnostic techniques and medical and surgical treatments practiced in each of these subcategories. Special attention will be given to applicable exercise assessment techniques used in the laboratory and in clinical exercise settings.

**APK 4125 Exercise Testing and Prescription**

College of Health, Department of Movement Sciences and Health

3 sh (may not be repeated for credit)

Prerequisite: APK 3110/L

Co-requisite: APK 4125L

Physiological theory, administrative principles and techniques of exercise testing and prescription. Includes health appraisal, risk stratification, and goal setting. Students are required to complete an exercise prescription assignment outside of class.

**APK 4125L Exercise Testing and Prescription Laboratory**

College of Health, Department of Movement Sciences and Health

1 sh (may not be repeated for credit)

Prerequisite: APK 3110/L

Provides practical experience in body fat analysis, flexibility testing, basic exercise stress testing, the PWC - 170 Submaximal Aerobic Capacity test, and performance testing for 7 fitness parameters.

**APK 4163 Sports Nutrition**

College of Health, Department of Movement Sciences and Health

3 sh (may not be repeated for credit)

Prerequisite: (HUN 2201 OR HUN 1201 OR HSC 2577) AND (APK 3110/L OR PET 3351C)

Students will examine the fundamental principles of sports nutrition, with an emphasis on evidence-based nutritional strategies to optimize health, fitness, and athletic performance. Topics include human energy systems, optimal nutrient amounts and timing, and weight management strategies in sports.

**APK 4200 Neuromechanics of Human Movement**

College of Health, Department of Movement Sciences and Health

3 sh (may not be repeated for credit)

Prerequisite: APK 3110L AND APK 4901\*

This course covers the neural mechanisms associated with human movement and control. Central and peripheral components associated with movement will be discussed. A major emphasis will be placed on the mechanistic control of coordinated movement. This course includes high impact practices (HIPs) where students critique relevant literature and evaluate different aspects of human movement and control in a variety of laboratory experiences related to course topics.

**APK 4234C Electrocardiogram Interpretation and Graded Exercise Testing**

College of Health, Department of Movement Sciences and Health

3 sh (may not be repeated for credit)

Prerequisite: APK 4119

The acquisition and interpretation of both resting and exercise electrocardiograms is covered, as well as an overview of heart anatomy, function and electrophysiology. Students are taught to identify various cardiac dysrhythmias and to administer a graded exercise test according to the American College of Sports Medicine guidelines. Students will engage in laboratory hands-on assignments that will include prepping of subjects, conduction and interpretation of a resting and graded exercise test. Department Permission is required.

**APK 4409 Success in Sports**

College of Health, Department of Movement Sciences and Health

3 sh (may not be repeated for credit)

Success in Sports (SIS) is an integration of cross-boundary research documenting the determinants of success in sports. Special emphasis will be placed on elite athletic performance. Will be organized round theoretical accounts for the attainment of elite performance. In addition, the themes of Who in which profiles characteristics of elite athletes will be presented. Why in which inherited and acquired capacities responsible for elite performance will be presented, and How in which selected techniques to maximize training effects will be examined.

**APK 4600C Aging and Physical Performance**

College of Health, Department of Movement Sciences and Health

3 sh (may not be repeated for credit)

Prerequisite: APK 4125/L

Provides an overview of the aging process and its effects on physical performance, and the major effects of regular exercise on the aging process. Emphasis will be placed on the understanding of the physiological, psychological and social factors which affect movement capabilities, the assessment of physical performance, and the development of activity programs for the aging.

**APK 4610C Applied Resistance Training and Conditioning**

College of Health, Department of Movement Sciences and Health

3 sh (may not be repeated for credit)

Prerequisite: APK 3110/L AND APK 4114C\*

This course covers advanced techniques of resistance training and conditioning to improve athletic performance and will be taught mainly as a laboratory/practical experience. The student will gain hands-on experience in Olympic-style lifting techniques, unilateral training, free-weight exercises and techniques for alternative modes and nontraditional implement training.

**APK 4901 Research Methods in Exercise Science**

College of Health, Department of Movement Sciences and Health

3 sh (may not be repeated for credit)

Prerequisite: APK 2000\* AND STA 2023

This course examines the scientific method and the role of research in developing knowledge in the discipline of Exercise Science. Students will gain experience to become critical consumers of research. Meets College-Level Communication Skills Requirement.

**APK 4905 Directed Study**

College of Health, Department of Movement Sciences and Health

1-12 sh (may be repeated indefinitely for credit)

**APK 4941C Senior Capstone Experience in Exercise Science**

College of Health, Department of Movement Sciences and Health

3-6 sh (may be repeated for up to 6 sh of credit)

Prerequisite: APK 4944

As a capstone experience for Exercise Science students, this 3-6 credit course will provide opportunities for students to put theory into practice through active participation in on-the-job related participation. Students are supervised by practitioners in an Exercise Science relevant field and by faculty academic support. Additionally, students are required to attend a series of five (5) online lectures on topics related to professionalism, management, legal, and health behavior in the health and fitness industry. Departmental permission, attendance to initial internship meeting, and online lectures are mandatory.

**APK 4944 Exercise Science Practicum**

College of Health, Department of Movement Sciences and Health

3 sh (may not be repeated for credit)

Prerequisite: APK 4114C\* AND APK 4119\* AND APK 4125/L

This is a laboratory practicum course for evaluation, review, and mastery of the competencies required per ACSM guidelines and CAAHEP accreditation standards.

**APK 5116C Applied Physiology in Muscular Development**

College of Health, Department of Movement Sciences and Health

3 sh (may not be repeated for credit)

Knowledge and understanding of the physiological functions of skeletal muscle and the dynamics of strength development.

**APK 5204 Applied Motor Learning/Control in Exercise Science**

College of Health, Department of Movement Sciences and Health

3 sh (may not be repeated for credit)

Advanced study of principles / theories of human motor learning, behavior, performance.

**APK 5601 Preventative Health in the Aging Population**

College of Health, Department of Movement Sciences and Health

3 sh (may not be repeated for credit)

Provides an overview of the aging process and its effects on physical performance, and the major effects of regular exercise on the aging process. Emphasis will be placed on the understanding of physiological, psychological, and social factors affecting movement capabilities, the assessment of physical performance, and the development of activity programs for the aging population.

**APK 5702 Statistics in Exercise Science**

College of Health, Department of Movement Sciences and Health

3 sh (may not be repeated for credit)

This course covers statistical analysis methods for descriptive, correlational, and experimental designs. Descriptive statistics, linear regression, introduction to multiple regression, t-ratio, analysis of variance for independent and repeated measures designs, factorial designs (Independent Groups, Repeated Measures, and Mixed Factorials), Analysis of Covariance, MANOVA, Chi square, and Non-parametric measures are included. Discriminant Function Analysis, and Power Analysis. In addition, reliability and validity issues related to experimental designs are addressed. Students receive instruction in the use of SPSS.

**APK 6111C Advanced Exercise Physiology**

College of Health, Department of Movement Sciences and Health

3 sh (may not be repeated for credit)

Research and problems in exercise physiology; advanced study of reactions of the human body under stress and during exercise. Material and supply fee will be assessed.

**APK 6127C Clinical Exercise Testing and Interpretation**

College of Health, Department of Movement Sciences and Health

3 sh (may not be repeated for credit)

Physiological theory, administrative principles and techniques of exercise testing and prescription. Includes health appraisal, risk stratification, and goal setting. Students are required to complete an exercise prescription assignment outside of class. Course includes hands on experience in exercise testing with advanced equipment including hydrostatic weighing, environmental conditions, and blood glucose and lactate analysis. Course concludes with a student presentation of an exercise prescription based on testing results, medical and exercise history and risk stratification. Material and Supply fee will be assessed.

**APK 6167C Advanced Human Nutrition and Metabolism**

College of Health, Department of Movement Sciences and Health

3 sh (may not be repeated for credit)

An advanced study of the role of nutrition as a means to enhance performance in exercise and sport. Topics include principles of energy metabolism, nutrients in their use during exercise, regulation of metabolism by macro and micro nutrients and their role in weight control with athletes. The validity and safety of proposed ergogenic aids are also explored. This course will evaluate the role of nutrition and supplementation vis- -vis exercise. Topics include: fat, carbohydrate, protein, vitamin, mineral and water needs of the active person; energy metabolism; nutritional and body composition issues; nutritional concerns for special groups; sports supplements; body composition issues. Prerequisites: An undergraduate exercise physiology class.

**APK 6172C Cardiac Electrophysiology**

College of Health, Department of Movement Sciences and Health

3 sh (may not be repeated for credit)

This course is designed to instruct students in the acquisition and interpretation of resting and exercise, normal and abnormal electrocardiograms. This course will acquaint students in identifying several supraventricular and ventricular dysrhythmias as well as the procedures for exercise testing and prescription in healthy and diseased populations.

**APK 6226 Analysis of Human Movement**

College of Health, Department of Movement Sciences and Health

3 sh (may not be repeated for credit)

The course will provide students with the tools necessary to collect and analyze characteristics of human movement using current neuromechanical technologies. Students will engage in neuromechanical study design, implementation, analysis, and dissemination within the laboratory setting.

**APK 6905 Directed Study**

College of Health, Department of Movement Sciences and Health

1-12 sh (may be repeated indefinitely for credit)

**APK 6940 Internship in Exercise Science**

College of Health, Department of Movement Sciences and Health

3-6 sh (may be repeated for up to 6 sh of credit)

This course provides opportunities for graduate students to complete an internship in an agency or organization directly related to the exercise science discipline for the purpose of gaining necessary experience in the field. Faculty and agency personnel will supervise the student as the student participates in a wide range of services available in the setting. Goals and objectives will be planned by the student, instructor, and agency supervisor. Reports will be required on a regular basis with a final comprehensive exam on topics related to exercise science. Permission is required.

**APK 6970 Research for Master's Thesis**

College of Health, Department of Movement Sciences and Health

3-6 sh (may be repeated for up to 6 sh of credit)

Graded on satisfactory / unsatisfactory basis only. Permission is required.

\* This course may be taken prior to or during the same term.